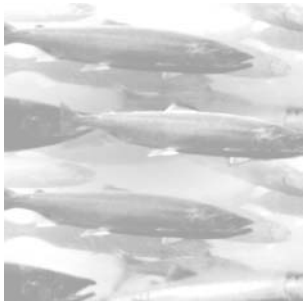

Record of Decision

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Appendices

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I. DECISION TO BE MADE

This Record of Decision (ROD) documents the decision by the National Marine Fisheries Service (NMFS), to issue three Incidental Take Permits (ITPs), pursuant to the Endangered Species Act (ESA) Section 10(a)(1)(B), to Public Utility District No. 1 of Chelan County (Chelan PUD) and Public Utility District No. 1 of Douglas County (Douglas PUD). NMFS issues this ROD in compliance with the agency decision-making requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) NEPA regulations at 40 Code of Federal Regulations (CFR) Parts 1500-1508, and NMFS' NEPA implementing procedures found at National Oceanic and Atmospheric Administration (NOAA) Administrative Order 216-6. This decision is based upon the analysis included within the Anadromous Fish Agreements and Habitat Conservation Plans for the Wells, Rocky Reach, and Rock Island Hydroelectric Projects Final Environmental Impact Statement (FEIS), issued December 27, 2002; three ESA Section 7(a)(2) Biological Opinions[1] issued by NMFS (Biological Opinions); and NMFS' Statements of Section 10(a)(2)(B) Findings (Appendix D). Refer to Appendix A for a list of acronyms used in the ROD.

This ROD: a) identifies the alternatives considered in reaching the decision; b) identifies the environmentally preferred alternative; c) states NMFS' decision and presents the rationale for its decision; and d) states whether all practicable means to avoid or minimize environmental harm from implementation of the selected alternative have been adopted (40 CFR 1505.2).

II. INTRODUCTION

The FEIS analyzes possible environmental and socioeconomic impacts from the operation and maintenance of three hydroelectric facilities on the Columbia River, over a 50-year period, under a range of protection measures for anadromous salmonid species. The NMFS *proposed action* is to issue ITPs for the operation and maintenance of these facilities, according to the protection measures provided in Anadromous Fish Agreements and Habitat Conservation Plans (HCPs) for each hydroelectric project. The HCPs set a "no net impact" standard for salmon and steelhead protection at the Wells, Rocky Reach, and Rock Island hydroelectric projects operated by the Chelan and Douglas PUDs; while providing the PUDs with some degree of certainty for the long-term operation and maintenance of these projects.

The *purpose of the action* is to develop a comprehensive, long-term strategy for protecting and aiding the recovery of anadromous salmonids in the Mid-Columbia River, two of which are currently listed as endangered under the ESA, while allowing Chelan and Douglas PUDs to continue generating electricity.

[1]NMFS has developed and issued three biological opinions, one for each incidental take permit: (1) Biological Opinion, Unlisted Species Analysis, and Magnuson-Stevens Fishery Conservation and Management Act Consultation for proposed issuance of a Section 10 Incidental Take Permit to Public Utility District No. 1 of Chelan County for the Rocky Reach Hydroelectric Project (FERC No. 2145) Anadromous Fish Agreement and Habitat Conservation Plan and construction of a small turbine in the attraction water conduit of an adult fishway; (2) Biological Opinion, Unlisted Species Analysis, and Magnuson-Stevens Fishery Conservation and Management Act Consultation for proposed issuance of a Section 10 Incidental Take Permit to Public Utility District No. 1 of Chelan County for the Rock Island Hydroelectric Project (FERC No. 943) Anadromous Fish Agreement and Habitat Conservation Plan and construction of a small turbine in the attraction water conduit of an adult fishway; and (3) Biological Opinion, Unlisted Species Analysis, and Magnuson-Stevens Fishery Conservation and Management Act Consultation for proposed issuance of a Section 10 Incidental Take Permit to Public Utility District No. 1 of Douglas County for the Wells Hydroelectric Project (FERC No. 2149) Anadromous Fish Agreement and Habitat Conservation Plan.

The fish protection measures are also intended to satisfy the PUD's regulatory obligations with respect to anadromous salmonid species under the Federal Power Act (FPA), Fish and Wildlife Coordination Act, Pacific Northwest Electric Power Planning and Conservation Act, and Title 77 of the Revised Code of Washington (RCW).

The *proposed action is needed* to meet the dual goals of recovering ESA-listed anadromous fish and providing self-sustaining, harvestable populations of anadromous salmonids. Substantial declines in these populations have occurred as a result of (1) loss, destruction, or degradation of tributary habitat; (2) over harvest; (3) interaction with hatchery-reared fish; and (4) habitat inundation, blockage, and mortality from construction and operation of dams and reservoirs since European settlement of the Columbia River Basin.

The lead agency for the FEIS is the Northwest Region of NMFS. The FEIS was prepared to address regulatory requirements of NMFS, pursuant to NEPA, the ESA, the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and Executive Order No. 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations). The proposed action requires regulatory approval and issuance of the ITPs prior to implementation.

Chelan PUD has applied for ITPs pursuant to Section 10(a)(1)(B) of the ESA for a term of 50 years to authorize take caused by its Rocky Reach and Rock Island hydroelectric projects of the following listed and unlisted anadromous species: spring-run chinook salmon, summer/fall-run chinook salmon, sockeye salmon, and steelhead (Permit Species). The permit applications also include measures to mitigate for impacts to coho salmon, a species extirpated from the upper Columbia River Basin. Coho and the Permit Species are collectively referred to as "Plan Species." Douglas PUD has applied for an ITP pursuant Section 10(a)(1)(B) of the ESA for a term of 50 years to authorize take caused by its Wells Hydroelectric Project of the same Plan Species. All three projects are located on the Columbia River, Washington.

Under the permits, Chelan and Douglas PUDs would operate their respective hydroelectric projects and implement fish protection and mitigation measures in accordance with the HCP included in each permit application. The HCP sets forth specific performance standards that relate to the survival of each Permit Species. Each HCP defines an overall performance standard to achieve no net impact to the species migrating through the project. This includes a 91 percent combined adult and juvenile project survival rate through the projects and compensation for the 9 percent unavoidable project mortality provided through hatchery and tributary programs.

The Draft Environmental Impact Statement (DEIS) for this project was published on December 29, 2000 for public review (65 Fed. Reg. 82,976). Public comments received on the DEIS raised questions involving the implementation, regulation, and monitoring components of the HCPs. During 2001 and 2002, negotiations were conducted among the interested parties to address the issues identified during public comment on the DEIS. Response to these issues resulted in revised HCPs and applications for ITPs for all three Mid-Columbia River projects in March 2002. Notice of the revised applications for ITPs and availability for public comment was published by NMFS in the Federal Register on June 25, 2002 (67 Fed. Reg. 42,755). NMFS received comments on the revised HCPs as provided in Appendix B of this ROD. NMFS' responses to the revised HCP comments are provided in Appendix C of this ROD.

The notice of availability of the FEIS was published on December 27, 2002 (67 Fed. Reg. 79,081). NMFS received additional comments on the final documents from the Environmental Protection Agency (EPA) and other interested parties following the release of the FEIS. NMFS believes that the topics raised in those comments had previously been identified during the public comment period for the DEIS and revised permit applications. No information was received that would alter the conclusions in NMFS' Biological Opinions or NMFS' conclusions that the ESA's Section 10 issuance criteria have been met.

III. DESCRIPTION OF PROJECT ALTERNATIVES AND ALTERANTIVES CONSIDERED BUT NOT ANALYZED IN DETAIL

The FEIS addressed three project alternatives, a no action alternative and two action alternatives, to minimize and mitigate to the maximum extent practical the incidental take of both ESA-listed and non-listed anadromous salmon and steelhead at the Wells, Rocky Reach, and Rock Island hydroelectric projects. The following discussion summarizes the alternatives as described in the FEIS for all three projects and describes the public review process used to develop the alternatives.

Each alternative (including the no action alternative) provides some level of protection for all anadromous salmonid species. However, NMFS' ability to pursue additional protective measures differs markedly between the alternatives.

Alternative 1 (No Action Alternative) was included and evaluated to assess the effects of compliance with existing Federal Energy Regulatory Commission (FERC) license conditions and settlement agreements, and serves as the baseline for comparison with conservation measures associated with the action alternatives. *Alternative 2* (Hydropower Conservation Measures to Protect Anadromous Fish) analyzes conservation measures which could be implemented under both the FPA (in future relicensing, license reopener proceedings, or amendment proceedings) and Section 7 of the ESA. The additional conservation measures in *Alternative 2* include providing increased spill for 99 percent of the juvenile migration period; enhancing passage survival through turbines; operating a surface bypass system 24 hours per day for 99 percent of the juvenile migration, during adult migration period, and during the adult kelt passage period; and implementing various measures to improve adult passage. *Alternative 3* (HCP Alternative) represents the conservation measures and survival standards for all five anadromous salmonid species occurring in the Mid-Columbia River, as defined in the HCPs, over a 50-year time period and would be implemented under Section 10 of the ESA. The FEIS also considered, but eliminated from detailed study as independent alternatives, dam removal, additional juvenile fish bypass systems, additional spill, fish transportation, artificial fish production in addition to levels in the HCPs, seasonal reservoir drawdown, continuous spill program, and non-power operations.

NMFS considered public input in the development of these alternatives. These alternatives were refined after the initial public scoping process. The resulting alternatives were analyzed in the DEIS, published on December 29, 2000. The alternatives were further refined based on DEIS comments, and the subsequent revisions to the HCPs. In response to DEIS comments, the HCPs were revised to provide greater detail regarding the implementation and monitoring procedures, although the fundamental structure of the HCPs remained unchanged. The HCPs (*Alternative 3*) are the result of over 9 years of planning and negotiations between the parties, to establish a long-term agreement under Section 10 of the ESA.

The other action alternative (*Alternative 2*) was also revised, based on comments to the DEIS, to more clearly define specific components of this alternative, including associated implementation costs, for direct comparison to the other alternatives. These changes include specific operating procedures at the hydroelectric projects to improve juvenile and adult fish passage survival. Such procedures include spilling water to the maximum extent possible to increase non-turbine fish passage rates or modifying or replacing existing fish bypass facilities to improve survival and an assessment of increased predator control.

Based on the planned 50-year HCP implementation period for the proposed action, this same time period was used for comparison among all alternatives. The following are brief descriptions of the project alternatives. Further detailed descriptions and information on the project alternatives can be found within the FEIS.

A. Alternative 1 (No Action)

Alternative 1 represents baseline conditions, which include the existing FERC licenses and amendments that govern current operations at the projects. The licenses cover all aspects of dam operation and environmental resource protection measures. *Alternative 1* also includes conditions specified in existing settlement agreements, which outline mitigation programs, and generally consist of: (1) juvenile downstream migrant fish passage measures, (2) adult fish passage measures, and (3) hatchery-based compensation for fish losses. The EIS analyzed the effects of the projects operated under their current licenses on environmental resources within the project area for *Alternative 1*, as summarized in Table 1.

Wells Project

The 1990 Wells Settlement Agreement established the requirements for the Douglas PUD to fund, operate, maintain, and evaluate three anadromous fish-related programs. These measures, in conjunction with existing hatchery compensation programs, are considered to fulfill Douglas County PUD's obligation to protect anadromous fish and mitigate and compensate for the effects of the Wells Project on anadromous fish. The agreement also stipulates evaluation programs for fishery measures and establishes procedures for coordination among the PUD, its power purchasers, fishery agencies, and Tribes through the Wells Coordinating Committee.

Juvenile fish passage measures include the operation of a juvenile fish bypass (modified spillway) system. At least 92 percent of the juvenile fish pass the project through the bypass system, with an estimated survival rate of 98 to 99 percent. Overall project passage survival was measured at 99.7 percent for yearling chinook and measured over two years at 94.2 and 94.6 percent for juvenile steelhead, including direct and indirect sources of mortality passing the project.

Adult passage measures include operation of the adult fishways in accordance with criteria approved by relevant fisheries agencies. Although it is not presently possible to accurately measure adult survival with existing technology, studies in the Lower Columbia and Snake Rivers have found that direct adult mortality in the fishways is likely small under normal passage conditions (with survival averaging at least 96.8 percent per project).

TABLE 1. ALTERNATIVE CONSERVATION MEASURES AND COST

	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3
ESA-Listed Anadromous Salmonid Protection	No identified additional protection for ESA-listed or non-listed anadromous salmonid species	Additional protection to prevent extinction of the ESA-listed anadromous salmonid species; same as Alternative 1 for non-listed species	Additional protection to meet a no net impact standard for all anadromous salmonids, consisting of 91% combined adult and juvenile survival, habitat improvements, and hatchery production
Additional Protection Implementation Timing	During relicensing or license re-opener proceedings	Same as Alternative 1, except through Section 7 consultation for ESA-listed species (typical 5-year process)	Immediately following HCP approval
ESA-Listed Species Recovery Potential	Steelhead and spring-run chinook populations continue a long-term trend downward at a loss rate of 5 to 10% per year	Estimated 22 to 45% survival improvement potential over Alternative 1; additional basin-wide measures needed to meet recovery goals	Similar to Alternative 2, plus up to an additional 6% survival increase due to tributary habitat enhancements; additional measures may be needed to meet recovery goals
Juvenile Survival Standard	Meet existing on-site fish passage efficiency criteria; no specific survival standard	Increase spill, as needed, to meet unspecified survival rates for ESA-listed species; same as Alternative 1 for non-listed species	Meet the juvenile component of the no net impact standard (93% juvenile project passage, or 95% juvenile dam passage survival) for all anadromous salmonids; verified through survival studies
Adult Survival Standard	Continue existing fish passage protocols	Minimize impacts to ESA-listed species	Meet the adult no net impact standard component (98% project passage survival) for all anadromous salmonids
Habitat Enhancement	No PUD-funded habitat improvements	Same as Alternative 1	$46.5 million (1998 dollars) PUD funding provided over 50 years
Hatchery Production	Meet existing license and settlement criteria	Same as Alternative 1, although likely reductions to minimize effects on ESA-listed species	Same as Alternative 1 until at least 2013; possible subsequent reductions based on impacts to ESA-listed species (re-evaluated every 10 years
Cost (in millions)	$156 for Wells $392 for Rocky Reach $170 for Rock Island	$867 for Wells $1,474 for Rocky Reach $688 for Rock Island	$188 for Wells $511 for Rocky Reach $316 for Rock Island

The 1990 Wells Settlement Agreement identifies specific hatchery production levels for the anadromous fish species affected by the project, and provides the ability to adjust these additional compensation levels based on actual juvenile losses at the dam. However, production levels based on impacts of project inundation would not be altered. The agreement also establishes specific operational standards for the fish production facilities.

Rocky Reach Project

The existing fish protection measures undertaken by Chelan PUD for the Rocky Reach Dam are the result of mitigation and compensation requirements in the original project license and subsequent amendments, as well as interim stipulations executed in the Mid-Columbia Proceedings (FERC Docket No. E-9569). Although the latest revision to the interim stipulation expired in 1997, Chelan PUD continues in most years to operate its Rocky Reach Project in coordination with the Mid-Columbia Coordinating Committee, as it has under the previous stipulations.

The main goal of the most recent interim stipulation was to develop a safe (less than 2 percent mortality) juvenile bypass system. NMFS, in consultation with FERC, issued a biological opinion evaluating the construction, operation, and continued evaluation through 2006 of the permanent juvenile fish bypass system. As a result, a permanent juvenile bypass system was installed for the 2003 spring outmigration season. However, because the long-term operation and maintenance of the new juvenile bypass system is considered to be an integral component of the HCP for this project, its effect was analyzed as part of *Alternative 3*.

Under *Alternative 1*, Chelan PUD would maintain and operate the adult passage system according to the Detailed Fishway Operating Procedure criteria (or superior criteria), operate spill and turbine units to optimize adult fish passage per the terms of the recent stipulations.

Rock Island Project

Provisions provided in the 1989 FERC relicensing of the Rock Island Project included the 1987 Rock Island Settlement Agreement (revised in 1993) that established the requirements for the PUD to fund, operate, maintain, and evaluate three anadromous fish-related programs. These programs consist of: (1) juvenile fish passage measures, (2) adult fish passage measures, and (3) hatchery-based compensation measures.

Pursuant to the Rock Island Settlement Agreement, efforts to develop an adequate mechanical solution to the juvenile fish bypass issue were unsuccessful. As a result, the PUD is currently evaluating modifications at the spillway to increase the rate of non-turbine passage at the project and utilizing a conservation account to provide spill. This account (with an annual funding level of $2.05 million in 1986 dollars, and currently assessed at $3.2 million) is used by the fishery agencies and the Tribes to purchase spill as a means to increase the non-turbine passage of juvenile fish at the project.

The adult fish passage criteria established in the 1987 Rock Island Settlement Agreement are similar to those described above for Rocky Reach Dam. The agreement also established specific construction standards, production levels, operational standards, and evaluation procedures for fish hatchery facilities.

B. Alternative 2 (Hydropower Conservation Measures to Protect Anadromous Fish)

Alternative 2 sets forth changes to project operations and facilities that could be implemented at the project in future relicensing, license re-opener, or amendment proceedings, and consultation under Section 7 of the ESA. The Rocky Reach Project is scheduled for relicensing in 2006, the Wells Project in 2012, and the Rock Island Project in 2028.

The procedural mechanism for implementing such measures differs depending on the species status. For ESA-listed species, *Alternative 2* primarily involves the Section 7 consultation between FERC and NMFS on proposed modifications of project structures or operations or other plans that may affect listed species. It would also include obligations under the Magnuson-Stevens Act (MSA) through an evaluation of the potential impacts of the proposed action on the Essential Fish Habitat of chinook and coho salmon. For unlisted species, *Alternative 2* involves the use of NMFS' FPA authorities (and MSA authorities for summer/fall-run chinook salmon and coho) to pursue additional protective measures in future relicensing or license re-opener procedures or amendment proceedings.

The opportunities to change conservation measures through license re-opener clauses also vary by project. Long-term settlement agreements have been reached for Rock Island and Wells dams that may limit some of the opportunities at these projects in the near term. There is no approved long-term agreement for Rocky Reach Dam, and relicensing procedures are currently underway to enhance the conservation measures for anadromous fish at that project.

To the extent that additional protection of anadromous species required a change to a license, FERC approval would likely be required. Although FERC and NMFS have not determined what, if any, additional measures would be required over the next 50 years to protect these species, it is likely that the agencies would require conservation measures to improve fish passage conditions at the projects and that do not result in adverse impacts to critical habitat (once defined). These measures include maximizing the use of spill at all three projects to improve juvenile anadromous fish passage and survival, and potentially dam removal or reservoir drawdown conditions.

Alternative 2 also considers the construction and operation of a sluiceway bypass system at Rocky Reach Dam to be used with, or instead of, the existing bypass system. However, the specific measures, number of species covered, proportion of the migrants covered, and the implementation schedule are substantial uncertainties associated with this alternative.

C. Alternative 3 (Proposed Action-Project HCPs)

Alternative 3 includes the project operations, maintenance, and mitigation measures described in the proposed HCPs. ESA authorization for implementation of these measures would be accomplished through the Section 10 process, providing ITPs to Chelan and Douglas PUDs and the immediate implementation of protective measures (the HCPs) covering both listed and unlisted anadromous salmonid species.

Protection of anadromous salmonid species would be accomplished through implementation of certain protection measures implemented at the projects. In addition, each project must meet specific performance (survival) standards, which would be based upon survival estimates of the migrating species, rather than relying on operational measures that may or may not benefit the species. The HCPs require implementation of additional protection measures if the PUDs fail to achieve the performance standards. The HCPs define a "no net impact" standard applicable to all the anadromous salmonid species migrating through each dam. The no net impact standard would take into account that 100 percent survival cannot be achieved at the projects alone, requiring additional mitigation through off-site measures to increase salmonid productivity (e.g., hatchery supplementation programs and tributary habitat improvements) to achieve equivalent survival.

The no net impact standard consists of two components:

1. A 91 percent combined adult and juvenile project survival rate achieved within the geographic area of the projects through fish passage improvement measures.

2. Compensation for the 9 percent unavoidable project mortality provided through hatchery and tributary programs, with compensation for 7 percent mortality provided through hatchery programs and compensation for the remaining 2 percent mortality provided through tributary habitat improvement programs.

Survival rates would be directly measured, if possible, through project specific survival studies. Following an initial 3-year survival evaluation for each HCP covered species (Plan Species), coordinating committees (consisting of representatives of each HCP signatory party) would jointly decide if the standards are being met or if additional measures should be implemented to achieve the standards. Until the survival standards are achieved, the PUDs would continue to implement additional measures to meet the standard for each Plan Species. Once the standards are achieved for each Plan Species, survival would be re-evaluated every 10 years to verify continued compliance. These re-evaluation processes would be based on survival rates of one representative species for the spring migration period and one for the summer migration period. The HCPs include specific termination provisions if the performance standards cannot be achieved.

The HCP agreements stipulate a dispute resolution procedure that would apply to all disputes over the implementation and compliance of the agreements. These procedures rely on unanimous agreement of the pertinent coordinating committee representatives present for the dispute resolution process. However, if a unanimous decision cannot be reached, each of the HCP parties may pursue any other right they might otherwise have to achieve their objectives regarding anadromous fish protection.

The tributary habitat improvement programs, to compensate for up to 2 percent unavoidable losses at the projects, would be administered through tributary committees and funded by a Plan Species Account provided by the PUDs. The combined total funding through the 50-year term of the HCPs is about $46.5 million in 1998 dollars. Up to an additional $600,000 dollars ($200,000 dollars for each project) would also be provided to evaluate the relative merits of the tributary projects funded through the Plan Species Account.

The hatchery committees would direct the efforts required of each PUD to meet the hatchery compensation goal to achieve no net impact for each Plan Species. The estimated production capacity would be adjusted periodically, excepting for original project inundation mitigation, to achieve and maintain the no net impact standard. Adjustments to the hatchery compensation level may include reduced production to conform to actual project mortality, as determined from monitoring and evaluation, or increases if the base population levels increase.

D. Alternatives Considered But Eliminated From Detailed Analysis

During the scoping process for the EIS, several other alternatives were considered but eliminated from further analysis as independent alternatives because they did not meet the purpose and need identified for the project. The two primary reasons for excluding these alternatives were either: (1) the alternative in itself did not allow for the continued operation of the hydroelectric projects, or (2) the alternative did not satisfactorily address the entire range of issues affecting ESA-listed species. By themselves, these

alternatives are unlikely to result in recovery of ESA-listed salmonid species or to significantly enhance the number of unlisted anadromous salmonids returning to the basin. Each of these alternatives typically affects just one component of a multi-faceted problem and either impacts other areas of the salmonid life cycle or inadequately provides the protection necessary to recover the species to harvestable levels without the concurrent implementation of additional measures. Where appropriate, however, specific components of these measures are included in the two action alternatives that could be implemented under the adaptive management framework of the action alternatives. The following is a brief discussion of the eliminated alternatives, and the rationale for not considering them as unique alternatives.

Dam removal was suggested as an alternative to return the Mid-Columbia River to a free-flowing reach, thereby eliminating dam passage impacts and providing additional spawning and rearing habitat for some Plan Species. This measure is extremely controversial. Over the next 10 years, this option could be considered through reopener proceedings for each of the three projects, or during relicensing efforts for the Wells and Rocky Reach projects if requested by interested parties, although relicensing would not occur until 2028 at Rock Island Dam. Under the shortest possible time frame, it is likely that the decision to remove a dam would require up to 10 years, with an additional number of years needed to develop the procedures and to execute the deconstruction efforts. Throughout this time, salmon and steelhead would continue to decline, possibly to extinction. Therefore, due to the legal constraints and uncertainties associated with mandating dam removal, the time involved, and the interim impacts to both juvenile and adult anadromous salmonids, dam removal is not considered a reasonable alternative and was not considered in detail as a unique alternative.

Seasonal reservoir drawdown refers to lowering the water level of the reservoir located immediately upstream of a dam during juvenile fish migration periods. This would provide free-flowing reaches in the tailrace areas of the next upstream dam, and thus return the river to a more natural state. Significant modifications would be necessary to the existing fish passage facilities, and the seasonally fluctuating reservoirs would impact existing wildlife habitat, riparian habitat, and salmon and steelhead spawning and rearing habitats. Significant loss of power production would also occur, as would impacts to irrigation, municipalities, and industry. It is uncertain whether drawdown to minimum operating pool would result in an increase in juvenile survival in the Mid-Columbia River. Although smolt travel times would likely decrease, the correlation between migration speed and survival has not been consistently documented.

Increased use of spill or the further development of juvenile fish bypass systems were not considered adequate alternatives in and of themselves for all species. Although they are generally effective options for improving fish passage and survival at the projects, they have some limitations. Spill is limited by water quality concerns downstream, and bypass systems have different efficiencies depending on the species. Expanding the spill program to coincide with 100 percent of the juvenile migration period could make the project much less economical to operate and result in only minimal increases in juvenile survival. Although the Wells bypass system has proven effective, preliminary evaluations at Rocky Reach Dam indicate that additional measures might be needed to achieve the HCP survival goals. As a result, spill and bypass systems are included to varying degrees in each of the alternatives analyzed in detail, but not as unique, stand-alone alternatives.

An alternative method of fish passage would be to collect juvenile salmon and steelhead at dams as they migrate downstream and transport them by truck or barge around the downstream dams and reservoirs.

However, transportation programs are also limited by the efficiency of mechanical bypass collection systems. Under certain conditions, transportation may also result in relatively low adult returns and may increase the level of adult straying. Transportation assessments were conducted for the Wells and Priest Rapids hydroelectric projects; the results were generally inconclusive regarding the benefits of transportation on adult return rates, compared to in-river migration. In addition, due to the potential stress, injury, and mortality to juvenile anadromous salmonids associated with these systems, and the expectation that guidance efficiencies would fall short of supporting the required survival levels, this alternative was eliminated as a stand-alone option.

Hatchery programs to mitigate up to100 percent of the dam-related passage mortality were also not considered a viable stand-alone option, because hatchery fish can have direct and indirect effects on wild fish populations. Based on several decades of hatchery mitigation and enhancement activities, it is now clear that these processes alone would not recover ESA-listed species or satisfactorily enhance naturally producing unlisted salmonid populations in the Columbia River Basin.

IV. THE ENVIRONMENTALLY PREFERABLE ALTERNATIVE

As required by the CEQ's NEPA implementing regulations, NMFS must identify an environmentally preferable alternative based on its review of the NEPA analyses and other applicable analyses (40 CFR Part 1505.2(b)). The environmentally preferred alternative is the alternative that results in the least damage to the biological and physical environment, and that best protects, preserves, and enhances historic, cultural, and natural resources. Although NEPA regulations require the identification of an environmentally preferred alternative, the regulations do not necessarily require the selection of this alternative. As provided for in the regulations, the agency may take other factors into consideration when arriving at a decision on which alternative is implemented.

Alternative 3 (HCP Alternative) has been identified as the environmentally preferred alternative for a number of reasons. First, the HCPs provide the same level of protection for sockeye, summer/fall-run chinook, and coho salmon as they provide to the ESA-listed anadromous salmonid species. In addition, the HCPs set forth a timely implementation schedule and include performance-based (survival) criteria and an adaptive management approach to recovering and protecting all anadromous salmonids in the Mid-Columbia River. The HCP approach is consistent with other recovery efforts in the Columbia River Basin.

Because the primary focus of the HCPs is to improve fish passage survival at the projects, there are limited opportunities for impacting historic, cultural, or natural resources. Although the habitat enhancement projects funded through the Plan Species Account have the potential of affecting these resources, they are more likely to have a positive effect on natural resources and a limited influence on other resources. One aspect of *Alternative 3,* which could have substantial impacts on other resources, is a reservoir drawdown scenario. Although reservoir drawdown could result in substantial environmental impacts, its probability is expected to be lower under *Alternative 3* than under the other alternatives.

V. NMFS DECISION AND FACTORS CONSIDERED IN THE DECISION

In addition to identifying the environmentally preferred alternative, NEPA regulations require agencies to state in the ROD the decision that was made and how the decision was affected by the preferences

among all the alternatives based on relevant factors (including economic and technical considerations and agency statutory missions) (40 CFR Part 1505.2(a)(b)).

A. NMFS Decision

Section 10 of the ESA authorizes NMFS to issue permits authorizing incidental take of Federally-listed species. The applicant for such a permit must submit a conservation plan in accordance with Section 10(a)(2)(A) of the ESA. NMFS must issue the permit if they find that the permit application and conservation plan satisfy requirements of Section 10(a)(2)(B) of the ESA.

The proposed HCP and other alternatives have been described and evaluated in the FEIS. Based upon the review of the alternatives and their environmental consequences described in the FEIS as required under NEPA, and satisfaction of requirements under the ESA, NMFS has decided to issue three ITPs for the Rocky Reach, Rock Island, and Wells hydroelectric projects and to adopt *Alternative 3*, the proposed HCPs, as the environmentally preferred alternative. NMFS arrived at this decision while taking technical, economic, and agency statutory mission considerations into account, as discussed in greater detail in the following subsection.

NMFS has concluded in its Section 10(a)(2)(B) Statements of Findings (Appendix D) and its Section 7(a)(2) Biological Opinions for each project, all of which are incorporated here by reference, that Chelan and Douglas PUDs' applications and HCPs meet the criteria for permit issuance in accordance with Section 10(a)(2)(B) of the ESA. In making this decision, NMFS has also considered its trust responsibilities to Native American Tribes and has concluded that issuance of the permits is consistent with its trust responsibilities. See FEIS Sections 4.13.17 - 4.13.18.

B. Factors Considered in the Decision

NMFS authority relevant to the decision extends to either the granting (with specific limitation, conditions) of the ITPs required for implementation of the HCPs, or denial of the ITPs. In reaching this decision, NMFS is required to "identify and discuss all such factors including any essential considerations of national policy which were balanced by the agency in making its decision and state how those considerations entered into its decision" (40 CFR 1505.2(b); NOAA Administrative Order 216-6 Section 4.01.t (May 20,1999)). General permit criteria in 50 CFR 222.303 and Section 10(a)(2)(A) of the ESA must be met in addition to criteria specific to ITPs in 50 CFR 222.307. Alternatively, the denial of the ITPs must be made pursuant to Subpart D of 15 CFR part 904.

In reaching its decision to issue the permits for the Rocky Reach, Rock Island, and Wells projects, NMFS considered (1) whether the proposed action and alternatives are consistent with the requirements of other federal laws; (2) the environmental effects of implementation of the HCPs, focusing in particular on the effects of the hydroelectric projects on listed and unlisted anadromous species; (3) whether the HCP measures meet the statutory and regulatory criteria for issuance of a Section 10(a)(1)(B) permit; (4) the economic costs of the HCP measures and alternatives; and (5) the interest of the Tribes and others in continued harvest and hatchery production. Detailed discussions of these factors are presented in the FEIS, the Biological Opinions, and the Section 10(a)(2)(B) Statements of Findings (Appendix D), all incorporated here by reference. What follows is a brief summary of the factors considered.

Consistency of alternatives with other statutory requirements: NMFS balanced national policy considerations (i.e., consistency with the ESA, FPA, Clean Water Act, Northwest Power Planning Act, Tribal treaties, and the MSA) in making its decision to approve *Alternative 3* (HCP Alternative) for the protection of endangered species (50 CFR 222.307).

With the exception of *Alternative 1* (No Action Alternative), both action alternatives are consistent with the goals and objectives of these statutes. *Alternative 3* (HCP Alternative) for example, represents comprehensive long-term settlement agreements under the ESA, FPA, Fish and Wildlife Coordination Act, Pacific Northwest Electric Power Planning and Conservation Act, Essential Fish Habitat provisions of the MSA, and Title 77 RCW for the five Mid-Columbia River anadromous salmonid species.

Alternative 3 (HCP Alternative) is consistent with, and supports, other salmon recovery initiatives in the basin, including the Basinwide Salmon Recovery Strategy issued by NMFS in December 2000. In contrast, compliance under *Alternative 2* (Hydropower Conservation Measures to Protect Anadromous Fish) would occur primarily through the existing long-term settlement agreements established under the Mid-Columbia Proceedings and provisions of the existing FERC licenses or subsequent relicensing proceedings for all species except for those listed under the ESA. For ESA-listed species, NMFS would balance the differing statute requirements through Section 7 consultation under the ESA. Such consultations would be conducted independently for each project, and would likely focus on site-specific measures to avoid, minimize, or mitigate the take of listed species.

Environmental effects. As noted above, and discussed in greater detail in the FEIS and Biological Opinions, *Alternative 3* (HCP Alternative) has been identified as the environmentally preferred alternative because the HCPs provide the same level of protection for sockeye, summer/fall-run chinook, and coho salmon as they provide to the ESA-listed anadromous salmonid species. The HCPs provide timely implementation of measures that will improve survival and habitat conditions for these species. In addition, the HCPs include performance-based (survival) criteria and an adaptive management approach to recovering and protecting all anadromous salmonids in the Mid-Columbia River and is consistent with other recovery efforts in the Columbia River Basin. The HCP option also provides funding for the tributary fund, mitigation unlikely to be implemented under any other alternative.

Section 10(a)(2)(B) criteria. Upon receiving a permit application and conservation plan completed in accordance with the requirements of Section 10(a)(2)(A) of the ESA and providing an opportunity for public comment, NMFS considers the issuance criteria described in Section 10(a)(2)(B) of the ESA in determining whether to issue the permit. The permit can only be issued if all such criteria are met to NMFS' satisfaction. In addition, general permit criteria in 50 CFR 222.303 and criteria specific to ITPs in 50 CFR 222.307 must be met. Alternatively, the denial of an ITP must be made pursuant to Subpart D of 15 CFR part 904.

Section 10(a)(2)(B) issuance criteria require that the taking will be incidental to otherwise lawful activity; the applicant will, to the maximum extent practicable, minimize and mitigate the impacts of such taking; the applicant will ensure that adequate funding for the plan will be provided; the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild; and any additional measures that NMFS finds necessary or appropriate for the HCP's purposes will be implemented.

NMFS analysis and findings with respect to the ESA Section 10(a)(2)(B) issuance criteria are set forth in full in its Section 10(a)(2)(B) Statements of Findings (Appendix D) and Biological Opinions for each project.

NMFS found that the Rocky Reach, Rock Island, and Wells revised applications and HCPs meet NMFS issuance criteria. In sum, NMFS found that the taking at the Rocky Reach, Rock Island, and Wells projects was incidental to the operation and maintenance of these projects for power production. NMFS found that implementation of the HCPs will minimize and mitigate to the maximum extent practicable the impacts of such taking through implementation of specific measures to improve survival through the project, by providing funding for tributary habitat improvements and hatchery production, and by committing to meet specific survival standards. NMFS found that the applicants have provided adequate assurance that funding for implementation of the HCPs will be provided in their applications and by signing the HCPs. NMFS concluded in its Section 7(a)(2) Biological Opinions that issuance of the ITPs to Chelan and Douglas PUDs for spring-run chinook salmon, summer/fall-run chinook salmon, sockeye salmon, and steelhead was not likely to jeopardize their continued existence in the wild. Because this standard is equivalent to the standard set forth in ESA Section 10(a)(2)(B)(iv), NMFS found that Chelan and Douglas PUDs' permit applications and HCPs meet this issuance requirement. Finally, NMFS found that the revised HCPs incorporated all elements determined by NMFS to be necessary for approval of the HCPs and issuance of the permits.

NMFS also considered and analyzed the following additional regulatory criteria (50 CFR 222.307): the status of affected species or stock; the potential severity of direct, indirect, and cumulative impacts on the species or stocks and habitat as a result of the proposed activity; the availability of effective monitoring techniques; the use of best available technology for minimizing or mitigating impacts; and the views of the public, scientists, and other interested parties. NMFS' Statements of Findings, FEIS, and Biological Opinions address these criteria. In sum, NMFS found in its Biological Opinions that all of the listed stocks affected by the Rocky Reach, Rock Island, and Wells projects were in decline; the unlisted stocks were found to be stable or increasing. In addition, NMFS considered in its Biological Opinions the direct, indirect, and cumulative impacts of implementation of the HCPs and found that the HCPs would improve survival through the projects of all Plan Species and not appreciably reduce the likelihood of survival and recovery of the listed species in the wild. NMFS found that the HCPs provide for monitoring using best available technology to verify achievement of the performance standards and to monitor implementation of other measures. NMFS also found that the measures defined in the HCPs to minimize take at the projects represent the best available technology for improving survival of fish at hydropower projects. In addition, the adaptive management approach in the HCPs allows for the use of new technologies to achieve the performance standards, as those technologies become available. Finally, as set forth in detail in the FEIS and Biological Opinions, NMFS devoted resources for nine years to discussions and analysis in developing the revised HCPs, during which time NMFS met with and considered the views of Chelan and Douglas PUD, state and federal resource agencies, tribes, and non-governmental organizations.

Recent Reports. Since the FEIS was noticed on December 27, 2002, two studies containing updated estimates of the population growth rates of Permit Species have become available. The first is an updated, draft status review prepared by the West Coast Salmon Biological Review Team (BRT).[2] This

[2] Biological Review Team (West Coast Salmon Biological Review Team). 2003. Preliminary conclusions regarding the updated status of listed ESUs of West Coast salmon and steelhead. February 2003 Co-manager review draft.

document updates the information provided in Appendix E of the FEIS (summary of the 2002 Draft Quantitative Analysis Report) regarding stock status of ESA-listed Upper Columbia River steelhead and Upper Columbia River spring-run chinook salmon. The draft BRT report indicates that natural returns in 2000 and 2001 were relatively high, indicating that stock status has been improving somewhat for the most recent years available. This information falls within the range contemplated in Appendix E of the FEIS.

The second is a study that has been accepted for publication in Ecological Manuscripts (McClure et al., in press), which includes an estimate of population growth rates for Upper Columbia River summer/fall-run chinook salmon.[3] This information confirms and updates the observations in the original Upper Columbia River summer/fall-run chinook salmon listing decision, as described in the FEIS, Section 3.2.2.2, and also supports the conclusion in the Biological Opinions that this ESU is stable or increasing in abundance.

The combined information regarding updated status of Permit Species is considered in Section 4 of the Biological Opinions on the proposed issuance of ITPs to Douglas and Chelan PUDs. However, this information does not fundamentally alter the conclusions or considerations derived from the stock status information that was included in the FEIS. This information is not environmentally significant to the FEIS analyses because it is further fish abundance data and analyses that were considered in the FEIS to be continuously developed each year, and because the data and analyses in these reports are within the range of variability expected by the analyses relied upon in the FEIS (see FEIS Appendix E and Section 3.2.2.2). While the updated abundance numbers and population trends are generally more favorable than those available for the FEIS (i.e., recent population trends are increasing), these data do not change the outcome of the analyses of the environmental consequences analyzed in the FEIS. Therefore, NMFS has concluded that this new information does not warrant supplementation of the FEIS.

Economic costs. NMFS also considered the cost of the HCPs' measures and the other FEIS alternatives. The cost of the measures had a direct bearing on the willingness of the PUDs to implement the measures, which in turn had a bearing on the likelihood and timing of implementation. The cost comparison of the alternatives is presented in the FEIS at Table 2-9. NMFS weighed the cost of various measures against the potential benefit to the species. For example, providing spill for 99 percent of the juvenile migration rather than 95 percent as required in the HCPs would be extremely costly to the PUDs, not likely to be implemented voluntarily, and provide only marginal benefit to the species. NMFS considered the fact that some of the measures would be extremely costly and would severely limit or preclude power production (for example, seasonal reservoir drawdown, dam removal, or non-power operations).

Hatchery production. The HCPs provide greater stability of hatchery production levels, and a commitment by Chelan and Douglas PUDs to monitoring and evaluation programs. During the early development of the HCPs, NMFS determined that the 7 percent hatchery compensation levels may adversely affect wild salmonid populations under certain conditions, and consequently, would not guarantee that the 7 percent compensation level would continue through out the duration of the permits. To provide some level of assurance to the Tribes and the PUDs on this issue in the near future, the signatory parties revised several components of the HCPs' Hatchery Compensation Plan. First, the

[3] McClure, M.M, E.E. Holmes, B.L. Sanderson, and C.E. Jordan. (in press). A large-scale, multi-species status assessment: anadromous salmonids in the Columbia River Basin. Accepted for publishing in Ecological Applications.

parties detailed the initial production levels that must be obtained to meet the no net impact standard for each project. Second, the parties agreed that hatchery production commitments, except for original inundation mitigation, would be adjusted in 2013 and every 10 years thereafter to achieve and maintain no net impact. Thus, production levels, including those initially specified in the HCPs, would most likely be stable for at least 10-year intervals. Current hatchery production levels affecting ESA listed species have previously been analyzed under the ESA and are addressed by Section 10(a)(1)(A) enhancement permits (Permit Nos. 1094 and 1196) issued to the Washington Department of Fish and Wildlife. The HCPs allows adjustment of production levels prior to 2013 only if NMFS first seeks agreement from the HCP committees, proposes a transition plan, and allows elevation to the "NMFS Administrator" (meaning the NMFS Assistant Administrator for Fisheries). This revision to the HCPs was made to both provide greater assurances to the Tribes with respect to production levels (and harvest opportunities), and to allow sufficient time (approximately 2 to 3 generations) to assess the effects of previous changes to the hatchery programs. In addition, in response to requests from the Tribes, the revised HCPs expressly provide for supplementation programs for coho salmon and Okanogan Basin spring-run chinook salmon.

VI. MITIGATION MEASURES AND MONITORING

The CEQ's NEPA implementing regulations require agencies to identify in the ROD whether all practical means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not (40 CFR Part 1505.2(c)). The regulations further state that a monitoring and enforcement program be adopted and implemented, where applicable, for any mitigation. Mitigation includes avoidance, minimization, and reduction of impacts, and compensation for unavoidable impacts.

The HCPs establish an approach focusing on mitigation through avoidance of impacts and compensation for unavoidable impacts, a no net impact standard for each Plan Species, and the implementation of an adaptive management strategy. The no net impact standard consists of 91 percent combined adult and juvenile project survival goal and a 9 percent compensation for unavoidable project mortality. This 9 percent compensation level includes 7 percent provided through hatchery programs, and 2 percent through a tributary habitat improvement program.

The HCPs also identify specific monitoring and evaluation protocols to determine if the survival goals are met, and an adaptive management strategy if the survival goals are not being met (including termination or withdrawal provisions if it is determined that the standards cannot be met). These features are intended to account for the uncertainty in the scientific information concerning the Plan Species.

Mitigation and monitoring programs for *Alternative 1* (No Action Alternative) are discussed in detail in Subsection 4.2.1 (Alternative 1 (No Action)), and pages S-10 to S-13 of the FEIS. These programs are essentially a continuation of existing programs established through the FERC licenses or settlement agreements, with no specific provisions for additional mitigation or an adaptive management program. Existing hatchery mitigation levels would continue to compensate for fish and fish habitat losses associated with the projects. The existing compensation programs do not include off-site mitigation.

Programs associated with *Alternative 2* (Hydropower Conservation Measures to Protect Anadromous Fish) are discussed in Subsection 4.2.2 (Alternative 2), and pages S-13 to S-21 of the FEIS. While this

alternative is expected to improve fish passage conditions at the projects, resulting in greater survival rates, no specific fish passage survival goals are identified. Similar to *Alternative 1,* there are no specific off-site mitigation programs established under *Alternative 2*. Adaptive management processes would be accomplished through the Section 7 consultation process, as new information becomes available, indicating that provisions of the initial consultation were not adequate to ensure the continued existence of the ESA-listed species.

Brief comparisons of the anadromous salmonid conservation measures for each alternative are also presented in Table S-3 of the FEIS Summary, while alternative comparisons, by resource category, are summarized in Table S-4. In general, *Alternative 1* does not comply with ESA and represents a continuation of existing conditions. Potential modifications of the existing programs would be decided through the existing Mid-Columbia Coordinating Committees or at project relicensing or through license re-opener proceedings. Mitigation would occur primarily on-site, such as spilling water or improving juvenile fish bypass systems and maintaining adult fishways. The performance standard would be determined through fish passage efficiency measurements. The hatchery programs would continue at the existing production levels.

Alternative 2 would comply with ESA for the listed species, while protection for other species would be similar to *Alternative 1*. The performance standard for the ESA-listed species would likely be similar to *Alternative 3*, while those for the other species would likely be similar to *Alternative 1*. Fish passage improvements made to improve survival of listed species would not necessarily improve the survival rates for other species. The primary measure for improving juvenile fish passage survival is assumed to be through increased use of spill programs, although the use of spill could be limited by water quality concerns related to total dissolved gas levels. Mitigation would be limited primarily to on-site facilities and programs, similar to *Alternative 1,* with adaptive management functions provided by reinitiating Section 7 consultations with NMFS and the U.S. Fish and Wildlife Service (USFWS) for the ESA-listed species, and through the Mid-Columbia Coordinating Committees for other species. Hatchery production for at least the ESA-listed species is likely to be reduced, due to the potential impacts of hatchery fish on wild stocks.

Alternative 3 complies with the ESA for the listed species, similar to Alternative 2, but also sets the same protection performance standards for all the anadromous salmonids. The performance standard is set at no net impact, and consists of on-site fish passage improvements, as well as hatchery and off-site habitat improvement compensation for unavoidable mortality to meet specific survival goals. The off-site mitigation program provides over $46.5 million in 1998 dollars to improve fish habitat within the region, with the funding directed by the HCP committees. Adaptive management would also be accomplished through the HCP coordinating committees and guided by periodic measurements of project specific survival rates. Hatchery production would continue at existing levels for 10 years and would be adjusted as needed every 10 years thereafter through the issuance of ESA Section 10(a)(1)(B) ITPs to the operators of the relevant hatcheries.

VII. CONTACT PERSON

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